

XVII.—*The Mammals of Turkestan.*

By Dr. N. SEVERTZOFF.

[Continued from p. 57.]

59. *Lagomys rutilus*, n. sp.\*

The summer as well as the winter dress may be described from an adult specimen in change of fur, which was obtained in the end of May in the mountains of Vernoe. The winter hair is tolerably long, greyish yellow, with a black admixture commencing from the nape; the roots of the hair are dark lead-colour. It differs from *L. rufescens*, Gray, in having no white at all on the head, the middle of the neck, the belly, and the inner sides of the legs; all these parts are pale yellow (*fulvescentes*). Sides, throat, and the outer side of the legs yellowish brown; the ears are large, rounded, and covered with harsh yellowish grey hair; *the whiskers are yellow*, with a few black hairs among them; the claws are black. Length  $8\frac{1}{2}$  inches.

*Summer dress.* The whole upper part of the body light fiery brown; the throat chestnut-colour.

*Young.* The upper parts of the body are yellowish grey, yellower than they are in the adult in winter; the forehead light reddish brown. I obtained an old and a young specimen in the end of May 1867 in the mountains near Vernoe, at an altitude of about 7000 to 8000 feet. I also got an example in the spring change of dress, previous to the two above mentioned, in the rocks about the river Kara-bur, south of Aulje-ata, in the end of June, about 6500 feet above the sea, consequently further south and lower than the others; but it was still moulting: this specimen I lost afterwards.

The full summer dress is apparently attained at different times, from the middle of June until the middle of July. When moulting they are pied, with wide equal spots of the bright reddish brown colour; these spots, as I remember, were smaller on the Kara-bur specimen than on the one from Vernoe (which is now in the Moscow Museum); but in both these patches are very irregular.

It frequents places covered with juniper trees, and is not particularly watchful, all the three specimens obtained having been shot at very short range.

\* [Cf. the recently described Central-Asian species, *Lagomys ladacensis* and *L. macrotis*, Günther, Ann. & Mag. Nat. Hist. ser. 4, xvi. p. 231; *L. auritus* and *L. griseus*, Blanford, Journ. Asiat. Soc. Beng. xlv. p. 111. —E. R. A.]

60. *Lepus Lehmanni*, sp. n.\*

The first specimens of this hare were obtained by M. Lehmann from the Syr-Darja and the eastern shore of the Caspian, for the Academy of Sciences. They were attributed to *L. tolai* by Prof. Brandt, on account of their small size and the characteristic black edge round the ears. The examination of living specimens, however, does not confirm that determination. In shape and colour *L. Lehmanni* is much nearer to the European *L. timidus* than to *L. tolai*, forming an intermediate form between them which must be regarded as a separate species on account of its constant characters, which are alike in the specimens inhabiting the juniper trees of the Thian Shan, just below the snow-region, and those which are found on the warm shores of the Caspian.

It is a small hare, and weighs not more than 5 or 6 pounds. Length (tail excluded) 17–18 inches. The ears are longer than the head; if bent forward along the side of the head, they extend beyond it about 6–7 lines. Tail as long as the head, or only a little shorter. The hind legs are twice as long as the front legs, and are a little longer than the body measured from the shoulders to the root of the tail. Therefore the proportional measurements of the ears and legs are similar to those of *L. timidus* and its varieties (*L. aquilonius*, *L. caspius*); but the tail varies, and is sometimes shorter than the head, as in *L. tolai*, which differs in its much shorter ears and legs. The colour is just like that of *L. timidus*; the shoulders and back are yellowish grey-brown; each hair is marked with black and light yellowish brown rings; the flanks are lighter, in summer they are yellowish grey, and ash-coloured in winter; the nose, cheeks, and tip of the head are grey; the nape of the neck is greyish yellow, with soft unicolorous hair; the throat and breast as far as the front legs are greyish yellow, the hair being brownish yellow with grey tips; in summer the under fur on the coloured portions of the animal is light brown-grey, and in winter grey; the tail is white with a broad black line on the upper portion; the belly is white. *L. tolai* has, besides the belly, also the throat and tip of the head white.

The ears of *L. Lehmanni*, as already stated, are in colour similar to those of *L. tolai*—namely, greyish white, with a wide centre line of the colour of the back on the exterior, and with a narrow black edge on the terminal half of the ear; whilst in *L. timidus*, with the same coloured ears, this black edge

\* [Cf. *Lepus pamirensis* and *L. yarkandensis*, Günther, Ann. & Mag. Nat. Hist. ser. 4, xvi. p. 229; *L. Stoliczkanus*, Blanford, Journ. Asiat. Soc. Beng. xlv. p. 110, and *L. hypsibius*, id., tom. cit. p. 214.—E. R. A.]

becomes wider on the outer side of the ear, expanding into a large black spot  $1\frac{1}{2}$  inch in length and 6 lines in width. But this extension of the black edge on the outer side of the ears is also tolerably frequent in *L. Lehmanni*, but not beyond  $1\frac{1}{2}$  line or, at the utmost, 2 lines in width.

For a comparison of the skulls of *L. Lehmanni* and *L. tolai* I do not possess any material; but according to the above-mentioned characters of the former, the skulls of both species must be compared with *L. timidus*.

*L. Lehmanni* inhabits all the localities of the Thian-Shan mountains which were explored by me, ascending to a height of 10,000 feet, *i. e.* almost up to the utmost limit of the juniper bushes, but only sporadically. It is very numerous in the plains of the Chilik and its tributaries; whilst south of Issik-kul, on the Suok-Tube and Kir-djal, in the Alexandrowsk mountain-chain, and near Merke, it was not found by me, and it does not appear to inhabit the Karatau. On the other hand, it is numerous on the steppes of Iley, as also on the Syr-Darja steppes as far as the Karatau, and further west as far as Lake Aral. Its range is bounded on the west by the Caspian, as it has only been found on the eastern shores of that sea. I have named it after the traveller who first obtained examples of this species.

#### 61. *Camelus bactrianus*.

Throughout Turkestan; in summer it ascends even to the utmost summits of the mountains.

#### 62. *Camelus dromas*.

Occurs only in the western parts of Turkestan, and even there only in the lowest plains; I myself did not see it at any elevation above 1000 feet.

*B. hybridus* is found in exactly the same localities as the preceding.

#### 63. *Antelope subgutturosa* \*.

Resident throughout Turkestan in those localities which do not exceed the altitude of 4000 feet; but it is commonest on the plains of about 1000 feet.

\* [According to Mr. Blandford, Turkestan examples differ from the typical form in their darker face-markings and the much less open curve of their horns; but as intermediate specimens occur in Persia, he only separates the Turkestan antelope as a variety. *yarkandensis* (Journ. As. Soc. Beng. xlv. p. 112).—E. R. A.]

64. *Antilope saiga*.

I never met with this species, except in winter, when it is tolerably common throughout Turkestan, with the exception of the Zarevshan districts and the Kisil-kum steppes, extending as far as the sea of Aral. For the summer it leaves this country for the north.

65. *Ovis Karelini*, sp. n.

I met with this species in the high mountains of the north-eastern portion of Turkestan, where it kept all the year round. (*Cf. infra.*)

66. *Ovis Poliï*, Blyth.

Inhabits the summits of the mountains of North-eastern Turkestan, and does not descend below about 10,000 feet, keeping mostly just below the range of perpetual snow. (*Cf. infra.*)

67. *Ovis Heinsii*, sp. n.

At the same altitude as *O. Karelini*, only south of the localities inhabited by the latter. (*Cf. infra.*)

68. *Ovis nigrimontana*, sp. n.

In the western Thian-Shan mountains and the Karatau this animal is a resident in the larch-wood and apple- and ash-grove district, about 6000 feet altitude. (*Cf. infra.*)

69. *Ovis aries*, var. *steatopyga*.

Is kept throughout Turkestan up to a height of 7000 to 8000 feet above the sea, and in summer even to the range of perpetual snow. (*Cf. infra.*)

*Ovis Karelini*, Sev.    *Ovis Poliï*.    *Ovis Heinsii*, Sev.  
*Ovis nigrimontana*, Sev.

Before describing and comparing the different characters of the above species of Turkestan sheep discovered by me, I think it desirable for clearness to explain the different distinctions of the species forming the genus *Ovis*, many of which are introduced by me here for the first time.

The specific characters of sheep consist in the different size and shape of the horns and the various parts of the skull, the shape of the whole head, the mane of the neck, the difference in colour, and the size of the animal. The general form of the

body and the proportions of the animal's bones to each other are very similar in most of the species of this genus.

The most striking characters are those of the mane (in such species as possess one) and the horns; but whilst these are only fully developed in old male specimens, the characters of the skull and the marking of the skin are available in both sexes and at all ages. The characters of the horns have already been successfully used by Blasius for the easy and exact separation of the different sheep. But in those species recognized by him he has not noticed all the peculiarities of the horns which are constant, and therefore may be used for the more easy separation of the different species. Having discovered some new species, I was consequently obliged to find some new characters of the horns, which had not been used by Blasius, and thus to complete the geometrical list of their variations.

The horns of an adult sheep present a double spiral. 1st, the inner margin of the horn describes a spiral, which would fit on an inserted cone, called the *axil spiral*, which offers some characteristics of which Blasius had not taken any notice. 2nd, round the horn-core, even if it were straight, run three edges each describing one spiral along the whole length of the horn-core; this is the *edge spiral*, which has been used by Blasius in defining specific distinctions.

The whole spiral of the inner margin is divided into three curves: 1st, the *basal curve* ascends; 2nd, the *median curve* descends; 3rd, *terminal* or *final curve*, which again ascends.

The directions of these curves from the vertical section of the skull may be represented by straight lines or chords; the angles formed by these chords and the axis of the vertical section of the skull serve also as characters for distinguishing the different species. Furthermore, the horns of all sheep present three surfaces separated by more or less rounded edges, of which latter the two exterior are the "*nuchal edge*" and "*fronto-orbital edge*," and the third the interior or "*fronto-nuchal edge*." Of the three sides or surfaces of the horns, the two most interior may be called the "*frontal surface*" and "*nuchal surface*" (which meet at the fronto-nuchal edge), and the third the exterior or "*orbital surface*."

The edges, the surfaces, and the imaginary chords of the horns offer very good specific distinctions. The differences in the horns, as already mentioned, are completely visible only in adult male specimens; and the younger the animals the more similar are their horns. The form, the separation, and articulation of the different bones of the skull are most distinctly seen in young specimens—that is, as long as the separate bones

of the skull remain unanchylosed; and this, although not so easily as in young specimens, can be seen also in the oldest individuals. The general shape of the skull, again, presents plainer differences in adult animals in which the bones of the skull are already anchylosed.

All the wild sheep of Turkestan belong to one systematic and geographical group, which forms a genus not yet established in science.

For doing this some general characteristics are required in the systematic classification of the sheep.

These sheep, as is well known, belong to the Cavicornia, and, together with the genus *Capra*, form a very natural group. Linnaeus first established the two genera *Capra* and *Ovis*; afterwards, however, Pallas, having found between them an intermediate species (his *Ægoceros ammon*, or *A. Pallasii*, Rouill.) with characters peculiar to both the above mentioned genera, joined the two in one family of *Ægoceros*. Afterwards they had to be separated again, and with very good reason. I think, however, that the generic name of *Ægoceros* ought to be retained, though not in Pallas's meaning, and used for the species *Æ. ammon*, which is as distinct from *Capra* as *Ammotragus* (*Ovis*) *tragelaphus* is from the genus *Ovis*.

The latter genus I divide into two by the form of the horns:—1st, the north-eastern group of sheep, including the Turkestan species and the domestic *Ovis aries*; and, 2nd, the southern and western sheep will form the genus *Musimon*, characterized by the mane of its typical form.

I. The typical form for the genus *Ovis*, taking it in the above restricted sense, is *O. argali*, Pall. The characters of the genus are the following:—The horns gradually diverge from each other towards their points, which latter have an inclination outwards.

II. *Musimones*. The horns diverge from each other only to a certain length (not alike in all species); consequently the ends of the horns bend inwards again and approach one another. The form of the axil spiral is not so regular as is the case with *Ovis*.

So that the genus *Musimon* consists of a certain number of species, the horns of which do not quite agree with the above described normal form of the genus *Ovis*. The edges of their horns, which are spiral-shaped, are usually twisted on the right horn to the right hand and on the left to the left hand. The animals are usually much smaller in size than the true *Ovis*, the length from the tip of the nose to the tail being 4 to 4½ feet. The following species belong to this genus:—*Musimon musimon*, of the mountains of Corsica and Sardinia; *M. cypricus*,

from the island of Cyprus; a species closely allied to the former, from Asia Minor; *M. orientalis*, Gmel., from Northern Persia; *M. Vignei*, Blyth, from Chorosan; *M. arkal*, Br., from Turcomania; and *M. Burchelli*, Blyth, from the Himalayas.

This genus, in the shape of the horns, shows an approach to the goats; and the above-named species of *Ammotragus* and *Ægoceros* are closely allied to it. The former, being built like a sheep and having horns exactly like *Musimon cypricus*, wants the lacrymal fossæ of the goats in front of the orbit in consequence of the small development of that bone; there is also no ridge on the nose. The only species inhabiting Africa is the *tragelaphus*. The latter, besides the want of the lacrymal fossæ, differs also in its structure, being built like a goat, in the short skull and the beard which is found on male specimens; in the shape of the horns only does it resemble *Musimon*. These latter are almost smooth, in which this form differs from the sheep as well as from the goats; it is the Caucasian species *Æ. Pallasii*, Rouill. Another species, which also possesses a beard and ovine horns, occurs in Cabul (Journ. Asiat. Soc. of Bengal, 1840, p. 440; Wagn. Fortsetz. v. Schreb. 1844, Suppl. iv. p. 540, note).

Having in this way fixed (by help of comparative diagnosis) the position of the Turkestan sheep in systematic classification, I think it will be well to state their specific differences before going on to their more detailed description.

[To be continued.]

## PROCEEDINGS OF LEARNED SOCIETIES.

### ROYAL SOCIETY.

March 9, 1876.—Dr. Günther, M.A., Vice-President, in the Chair.

“On the Development of the Crustacean Embryo, and the Variations of Form exhibited in the Larvæ of 38 Genera of Podophthalmia.” By C. SPENCE BATE, F.R.S.

The author states that, although the general forms of several genera of Podophthalmous Crustacea are known, yet the details of their structure have been so unsatisfactorily figured and described, that the value and importance of hereditary elements are incapable of being studied and appreciated.

Through Dr. Carpenter he received from Mr. Power an offer of a considerable number of larvæ of exotic species, together with